

(b) surrounding at least a portion of said support ring with an elastomer.

REMARKS

Reconsideration of the above identified patent application is hereby respectfully requested in view of the foregoing amendments and following remarks. Claim 3 has been canceled and claims 1, 2, and 4 have been amended. Claims 1, 2, and 4 remain in the case.

The applicant appreciates the thoroughness of the review by Examiner Tho Dac Ta.

A petition and Fee for Extension of Time under 37 CFR 1.136(a) and payment thereof for a _____ month extension is attached hereto.

1-4. Various rejections under 35 USC 102 and 103 have been applied to the claims in view of the three cited references.

Claim 3 has been canceled and included in each of the remaining base claims. Claim three recites the raised

portion (16) that extends around the ring. Office action, item number 4, relates to this claimed element in particular.

Having the raised portion extend as claimed provides significant benefits that are disclosed. The first continuing object (page 5) seeks to provide a ring "that can be firmly held in its proper location in a receptacle connector".

The background discloses the unique problems of providing a "hotel" connector, in particular the high mating forces, the need to provide an environment seal, and the tendency of the lip to roll under itself when the plug is inserted at an awkward angle.

The support ring generally helps to maintain the lip in an extended position, thereby keeping it from rolling over. However, the high mating forces, especially those that occur when an O-ring of the plug-half bears against the inside of the lip (12), also tend to displace the support ring (14) from side to side.

(See hereinafter under the response to Office Action item numbers 5-6, for a clarification of the "O-ring" as

compared to the rigid support ring. These are entirely different elements and it appears that some confusion has occurred in this regard.)

The raised portion (16) of the support ring prevents lateral displacement of the support ring from occurring and therefore satisfies the stated object by ensuring that the support ring, "can be firmly held in its proper location in a receptacle connector".

See also the last sentence of the ABSTRACT.

This lateral force is generated both when inserting and removing the two connector halves, only in opposite directions, the first tending to displace the support ring in toward the connector body during insertion of the plug and tending to displace the support ring out and away from the connector body when the plug is removed.

The raised portion increases the cross-sectional area of the support ring and according to common mathematics, a larger area available to dissipate any given force (i.e., arising from the insertion or removal of the plug) reduces the pressure that is experienced (i.e., in pounds per square inch).

If the raised portion were omitted, when inserting or removing the connector halves, the force that the support ring exerts at the radius edge would increase substantially, beyond that which the radius edges 18 possibly can tolerate. Over the course of time (i.e., numerous insertions and removals), the edges 18 would tend to erode (i.e., wear out) the interior of the mold in response to the lateral loading cycles, thereby permitting an increasing and possibly excessive lateral displacement of the rigid support ring away from where the O-ring of the plug is disposed, thereby defeating the benefits obtained by the instant invention.

These lateral forces are significant and the problems so created have been solved by two remedies: the first being the radius edges 18 that prevent cutting or gouging of the mold material arising from the slight attempted lateral movement of the support ring within the mold and the second being the raised portion 16 that further resists this lateral displacement in either direction. It is the cooperation of these two elements that work together to optimally solve this problem.

Accordingly, the raised portion does indeed provide a significant and substantial benefit for a support ring when

the support ring is used in a connector in which an environmental seal must be maintained (i.e., especially when an O-ring is used with the plug [male] half) and where high mating/unmating forces are experienced.

This is further corroboration in the specification page 8, third paragraph, of an additional benefit that is provided by the raised portion which states, "[the] raised portion 16 that extends about the outer circumference...is used to retain the support ring 14 in its proper location within the mold".

Maintaining the support ring in a proper location during the formation of the mold is essential to the effective use of the invention. As mentioned hereinabove, lateral displacement of the support ring during use would render the invention ineffective. Clearly, the same would occur if the initial positioning of the support ring were not correct.

Accordingly, the raised portion provides two benefits. The raised portion decreases the lateral loading while also providing an external reference to aid in proper positioning and therefore manufacture of the connector.

Whichever of these two benefits is considered first, then the other must certainly be seen as providing an unexpected benefit. Were it not unexpected (that is, if it were obvious to those having ordinary skill), then the prior artisans skilled in such connector art would have been obligated to describe this as the best mode for bringing forth their respective inventions.

As the enclosed references fail to teach or suggest such an element as a raised portion, this silence is proof that they were unaware of any of these benefits. If they were aware, then they had duty to disclose the "best mode" for bringing forth the invention that they were aware of at the time of filing.

These are especially significant and surprising benefits provided by the raised portion that are not anticipated by the prior art.

The raised portion, as claimed, of a support ring is an important element of the instant invention, one that is absent the known prior art references and would therefore be absent any applied combination of the prior art references.

Accordingly, the rejection of remaining claims 1, 2, and 4 is believed to be overcome and reconsideration is respectfully requested.

As all remaining claims 1, 2, and 4 appear to be in condition of allowance, reconsideration thereof is respectfully requested, and a notice of allowance is courteously urged at the earliest time.

5-6. The Applicant's admitted prior art fails to disclose a support ring of any type, embedded or otherwise for use with such types of connectors.

The Applicant does mention an "O-ring" on page 2, line 10, but the O-ring is not any type of a support ring. Furthermore, the O-ring is not rigid, it is designed to flex and mold to the contour of a mating part to which it conforms to provide an environmental seal. The O-ring is typically found on the exterior of the plug half of the connector but it is always an externally operative component, which is the opposite of the instant invention. O-rings are indeed common in the molded connector industry. The O-ring includes an elastomeric ring that is disposed on top of the plug connector and which mates with the inside of the lip 12.

It is the force exerted by the O-ring upon the lip 12 that increases the likelihood of the lip to roll over, or possibly to expand radially. It is in part because of the O-ring that the inventive rigid support ring is required to compensate.

Clearly, the O-ring is **not** a rigid support ring and no admission by the Applicant of a rigid support ring has occurred.

In particular, the applicants' admitted prior art discloses only the O-ring and not the support ring. Accordingly, the rejections as applied under Office Action item numbers 5 and 6 are believed to be overcome and reconsideration is respectfully requested.

Furthermore, Bissi '854 appertains to providing an oil seal for a track vehicle that experiences "high values of average axial thrust" (column 3, lines 46,47). The purpose is to compensate for this constant thrust and the subsequent wear so as to be self-sufficient. There is no teaching or suggestion of the use of his device for anything other than such oil sealing track vehicle applications and it is believed that any suggestion to use his device otherwise, in

particular in an electrical connector must be born of hindsight. Clearly, one attempting to solve the problem of railroad hotel connectors would not be drawn to his disclosure as it solves an entirely different problem. Accordingly, Bissi et al. is believed to be non-analogous with regard to the problem solved.

Furthermore, even if Bissi et al were to be considered, the claims have been amended to each further recite a raised portion (in the support ring). This is a further element apart from the known prior art, including Bissi et al. Support for the significant and substantial benefits thereof have been described hereinbefore. Accordingly, the rejections of remaining claims 1, 2, and 4 are believed to be overcome and reconsideration is again requested.

7. A copy of a newly executed Declaration is enclosed with a request for benefit of the prior provisional application attached thereto. Reconsideration is respectfully requested.

8. The applicant appreciates the opportunity to communicate by telephone with the Examiner if necessary. Please direct all future correspondence to the new correspondence address and telephone as shown below.

Respectfully submitted,

 8/20/02

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